

'Rural & Remote' Digital Health Research

Led By:

A/P Andrew Stranieri; Centre for Informatics and Applied
Optimisation.

Who we are:

Centre for Informatics and Applied Optimisation/Health Informatics Lab

- Maths and IT researchers formed by former Soviet Union luminary
- Health informatics Lab research since 2000's – small group of 8 core researchers
- Mission to collaborate with health care stakeholders to direct research to practical applications
- Motivated by rural/regional shortage of health care professionals and worse health outcomes than in urban settings

Ongoing research themes

Our group's successes (and failures) in health informatics over the last decade have taught us that cutting edge IT research can disrupt health care for the better only if:

- the **technical** case is strong. The “smarts” are smart
- the **business** case is strong. Cost-effective, sustainable
- the **clinical** case is strong. Fits into workflows and ultimately improves clinical care

Alignment of our skill-set/motivations with digitally informed healthcare:

- Health analytics
- Remote patient monitoring
- Simulation
- Group reasoning
- Telemedicine
- Health security

CIAO – 35 Maths and IT researchers
HIL – 8 core researchers 13 Phd current students



A/Prof Andrew Stranieri



Dr Venki Balasubramanian



Sally Firmin



Prof Iqbal Gondal



Dr Giles Oatley



Grant Meredith



Dr Mehmood Chadhar



Dr Leigh Achterbosh



A/Prof Peter Vamplew

Key Industry Partnerships*:

HIL has performed contract research or published with in recent years



Northern Health



*(list not exhaustive)

Significant Relevant Projects

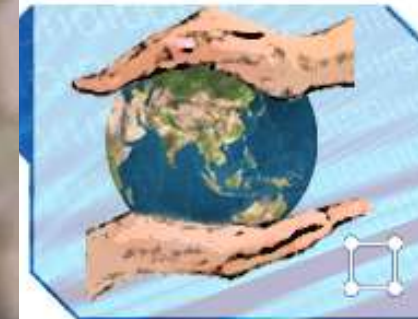
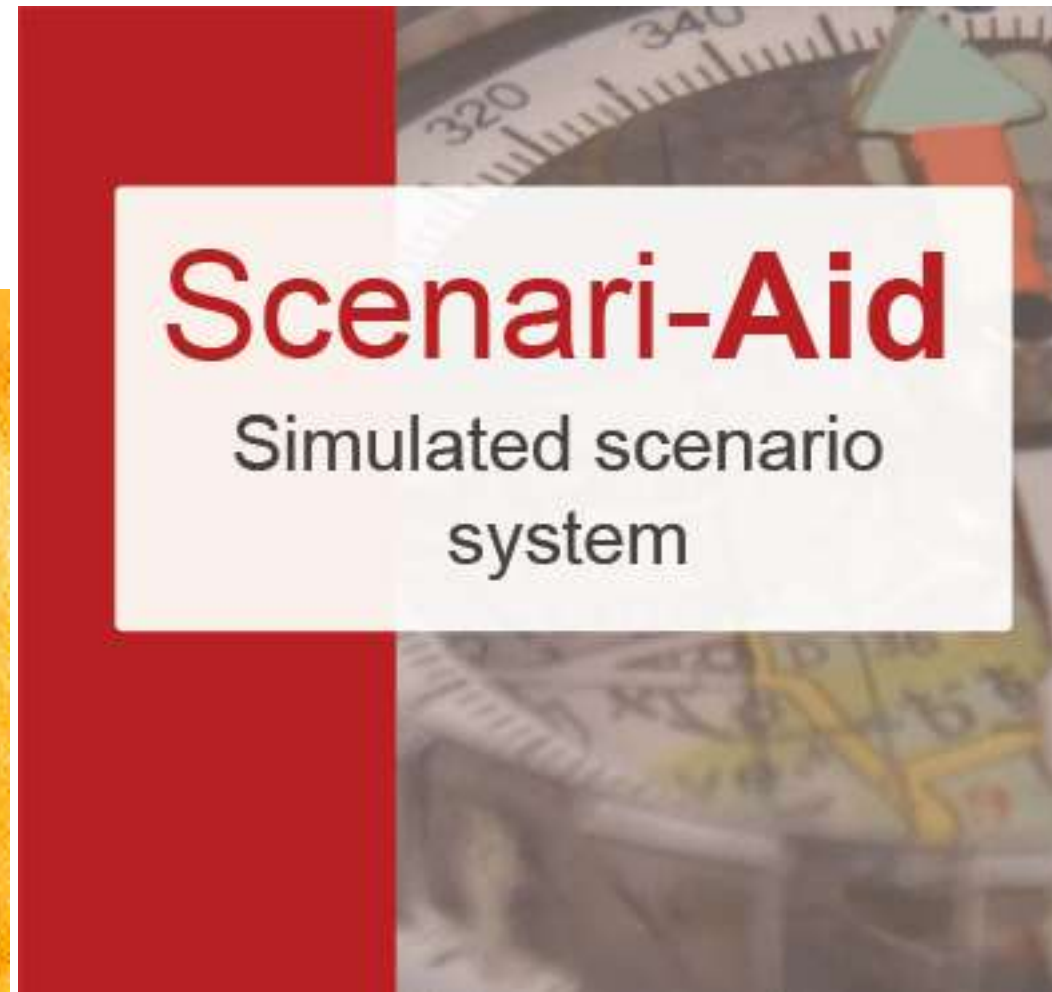
Research grant funding (CAT 1-3) >\$1,000,000 since 2012 including 3 ARC

Industry funding (CAT 4): >\$90,000

- 60 peer reviewed digital health publications since 2014
- Major role in resurgence in HIKM conference, part of ACSW

Technologies to Empower People to Participate in Society.

IT to help people who stutter practice



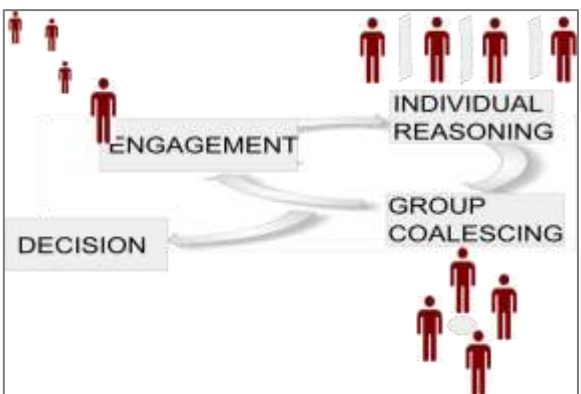
Grant Meredith

*Research project funded by Helen MacPherson
Smith Trust, Telematics Trust and Crowd Funding.*

Sample projects Group reasoning in health

ARC Discovery (Monash, Deakin, FedUni), ARC Linkage (RMIT)

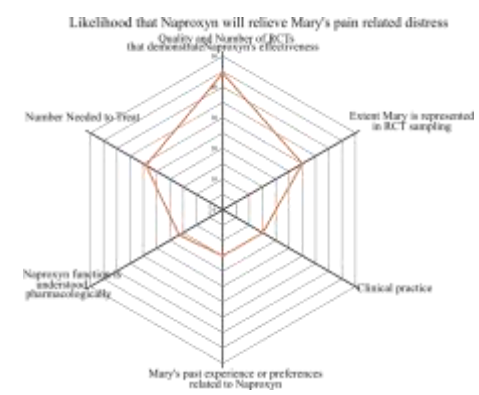
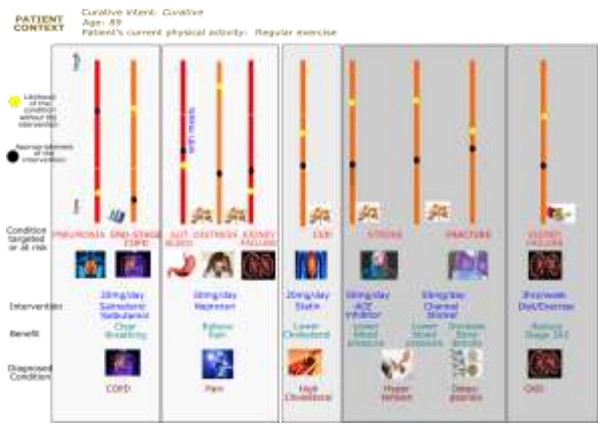
Understand **multi-disciplinary meeting** reasoning



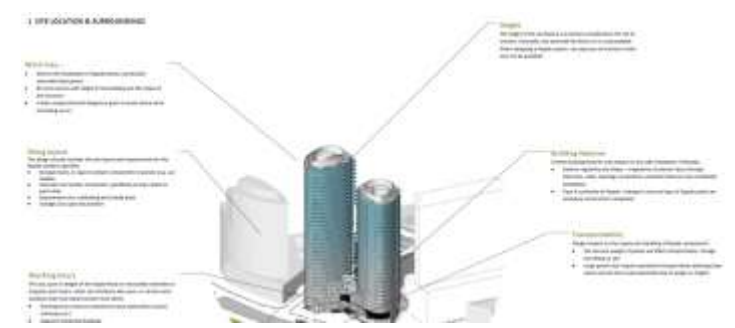
Understanding **ward round reasoning**
PhD Pervasi



Information visualisation for shared care
PhD Sharma



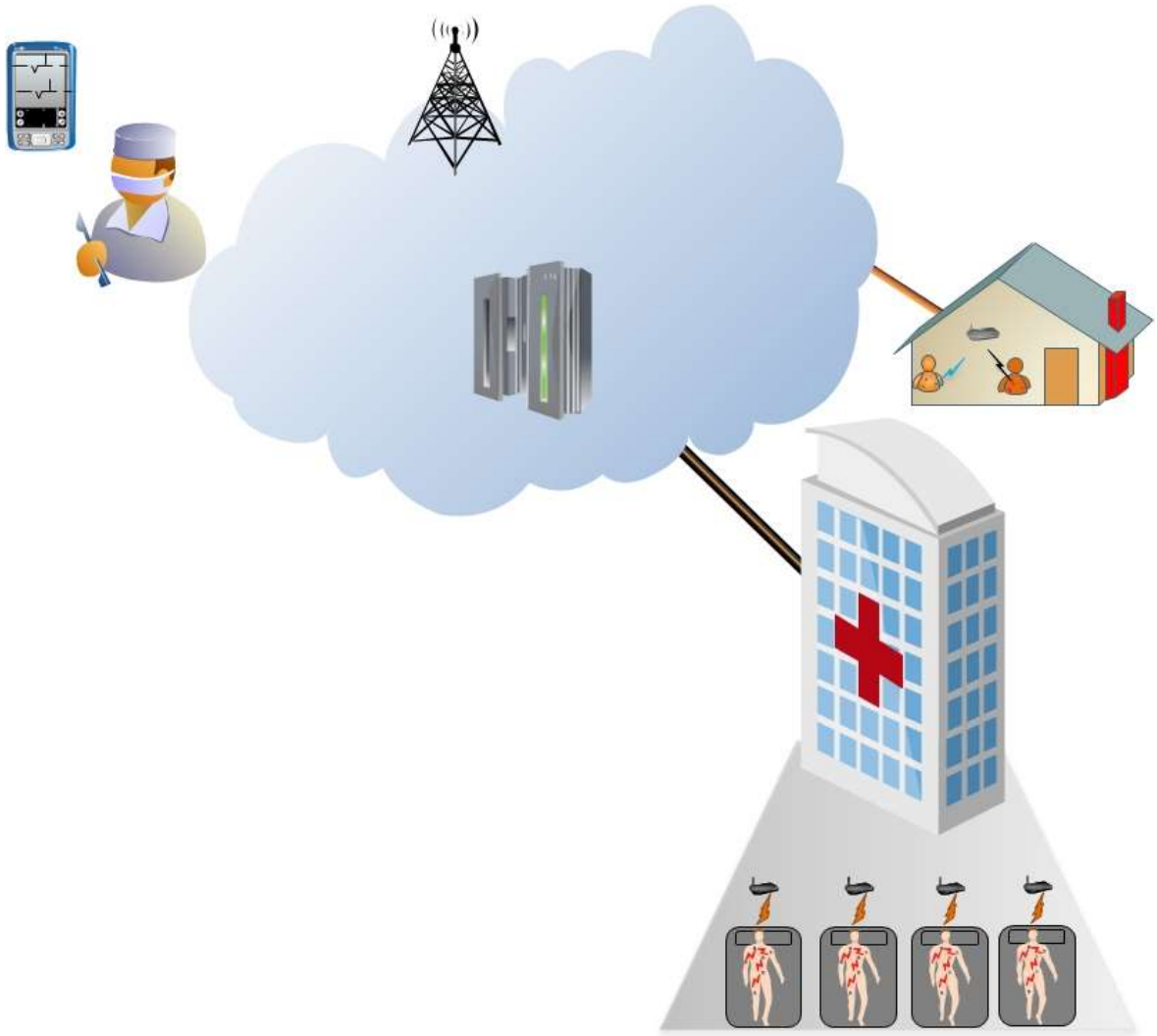
Information visualisation to enhance design for construction safety reasoning



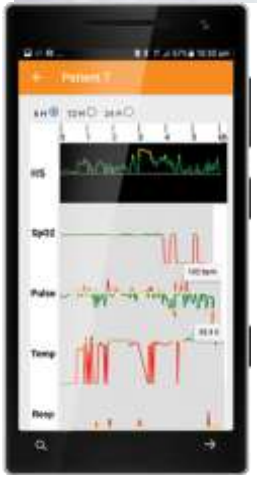
Remote patient monitoring

Funding: ANZ Medical Trustees, Karpagum College India,

Cloud based wearable sensor



MEWS Score



Dr Venki Balasubramanian



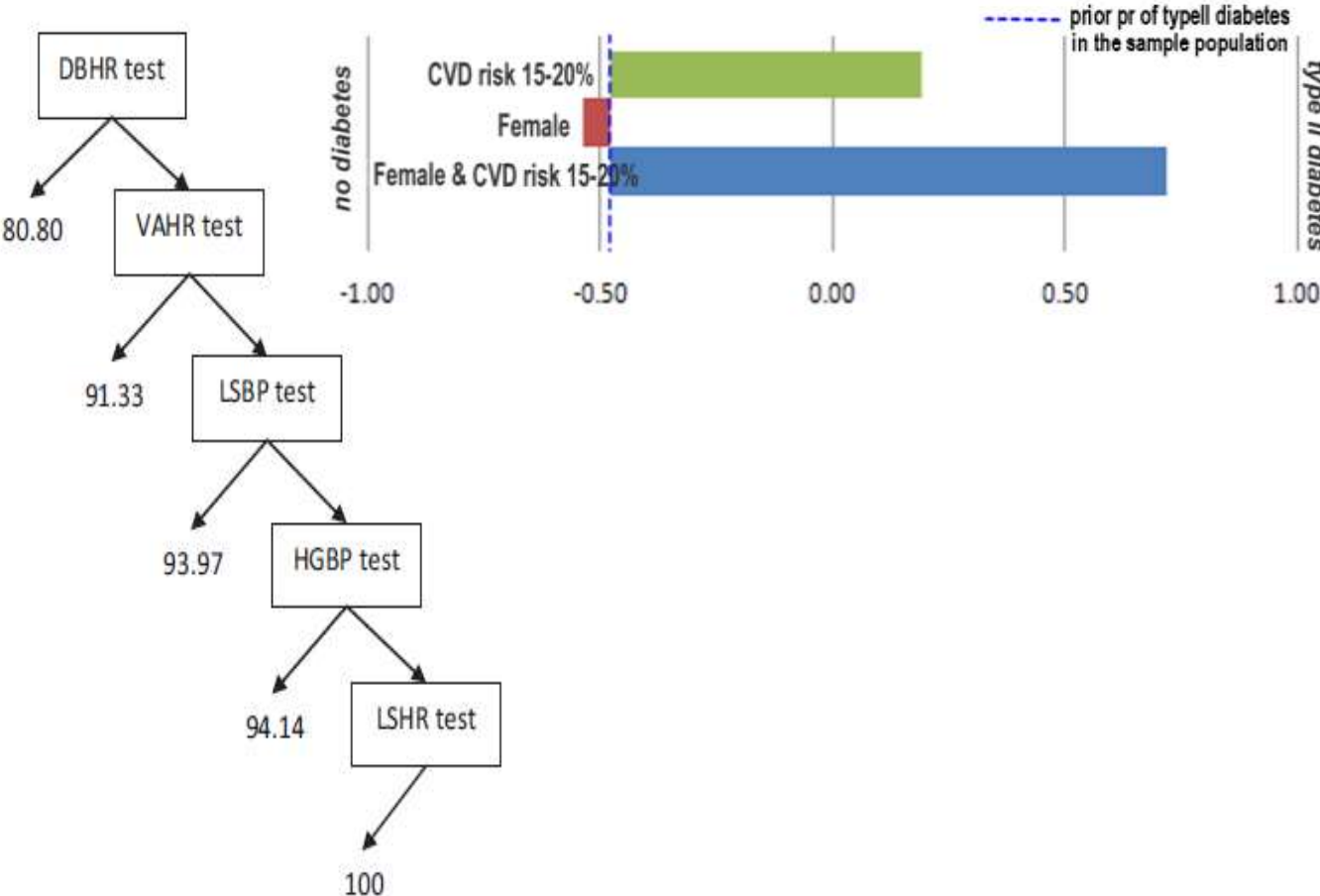
A/Prof Andrew Stranieri



Data analytics for chronic conditions

Polyaetiological Community Screening for

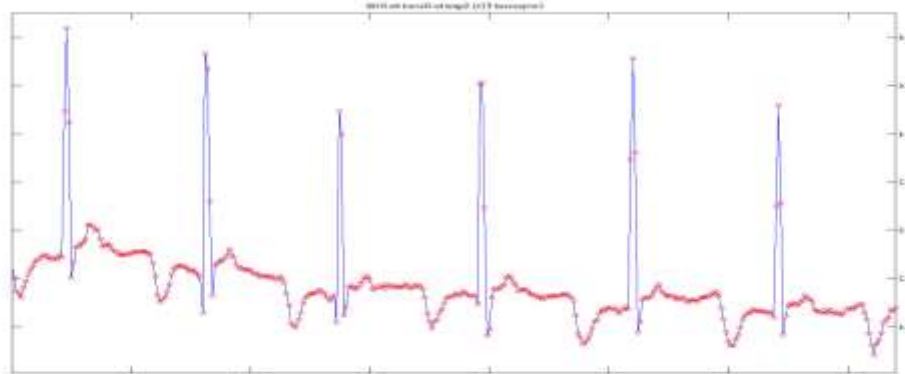
- Optimal sequence of tests for diabetes complications
- Undiagnosed diabetes



Stranieri, Jelinek, Venkatraman, Yatsko

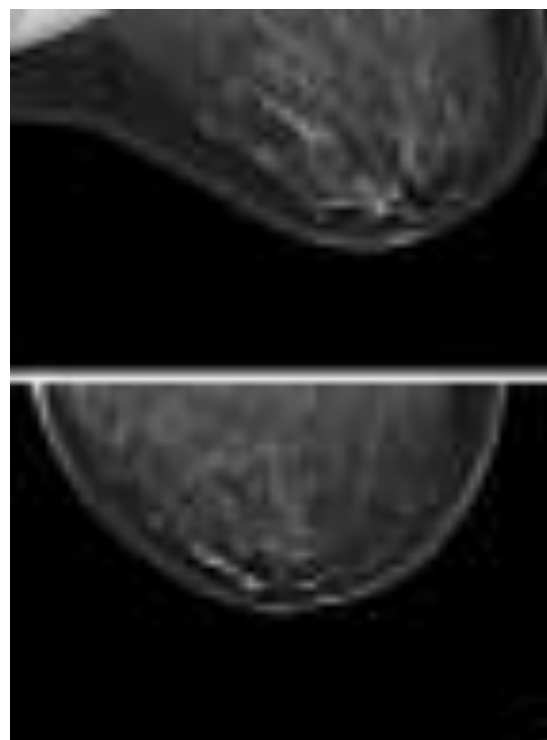
ECG reduction and forecasting in real time

PhD Al’Naimi



N-grams for Mammogram classification

PhD Kulkarni



HD3D Telemedicine for shortage

State Govt Vic Funded /

Tele-dentistry with UniMelb Oral Health CRC, Maryborough DS

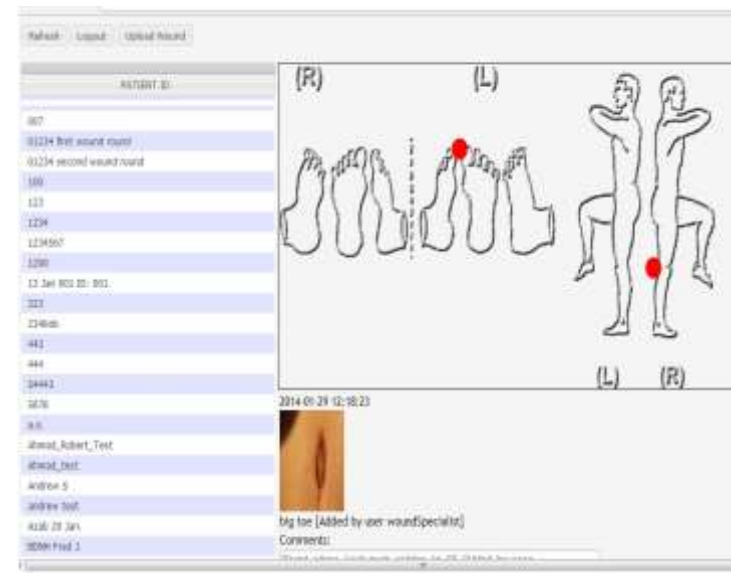


Stranieri, Marino, Collmann

HD3D Tele-psychiatry with UniMelb Dept Pscyhiatry



3D Tele-wound with Wimmera Health Care Group, West Wimmera Health Services



Tele-oncology BOHS/WHCG



Other...

Complementary Medicine Informatics

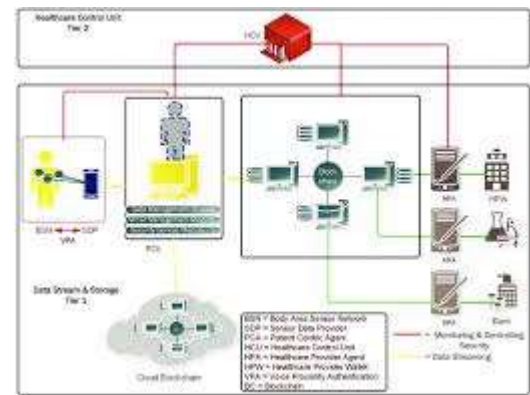
How patients use information to choose between diverse systems

For each criteria listed below, please enter a number between 1 (not important) and 5 (very important) that represents how important the criteria is for your choice of a type of medical practitioner. For example, how important is the criteria of 'experience' when I choose a medical system?

	1	2	3	4	5	No answer
Costs (Costs associated with a consultation and/or with a procedure)						*
Experience (Experience associated with diagnostic tests)						*
Treatment Effectiveness (The treatment procedures are considered work well)						*
Treatment Safety (The extent to which treatment may cause side effects and how of adverse effects or reactions)						*
Outpatient Time (How quickly the treatment or procedure take to work)						*
Equipment (The extent to which I am prepared to manage the condition myself)						*
Conduct (The						

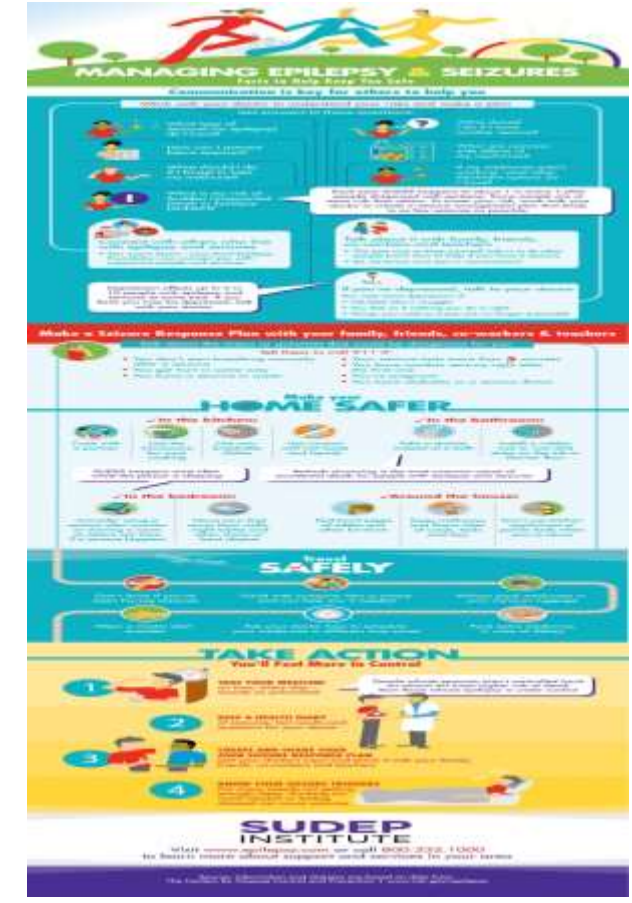
Blockchain for IoT health data

PhD Uddin



Multimedia for major depression and low health literacy

PhD Leicester



Social media in health care providers

PhD Ukoha



Oxford cyber-security in health index

Prof Gondal

Prospective

Name matching

Telstra Health

Reinforcement Learning

A/Prof Peter Vamplew

Contact us

A/P Andrew Stranieri

a.stranieri@federation.edu.au

0411147195